CLAIMS

What is claimed is:

1) A method for analyzing a sample comprising:

a) providing a sample containing one or more molecular species, wherein at least one of the molecular species is capable of stimulating scintillation;

b) providing a scintillating material, wherein the surface of the scintillating material adsorbs at least one of the molecular species via a general molecular property-based binding interaction between the molecular species and the scintillating material, and where the scintillating material can be stimulated to scintillate by at least one of the adsorbed molecular species, but is generally not stimulated to scintillate by any molecular species which is not adsorbed;

c) measuring the scintillation emitted by the scintillating material.

2) The method of claim 1, wherein the number of molecular species provided is at least two, and where at least one of said molecular species has a presence of, an absence of, or a degree of general molecular property-based binding interaction with the scintillating material distinct from the remainder of the molecular species.

3) The method of claim 1, wherein the general molecular property-based binding interaction is selected from the group consisting of charge-charge interactions, dipole-charge interactions, dipole-dipole interactions and hydrophobic interactions.

4) The method of claim 2, wherein the presence of, the absence of, or the degree of general molecular property-based binding interaction with the scintillating material is due to a chemical or biochemical transformation of one of said

molecular species into another of said molecular species, further comprising the step of determining the progress of or degree of completion of the molecular transformation.

5. The method of claim 1, wherein the scintillating material is selected from the group consisting of scintillating plastics and scintillating glasses.

6. The method of claim 1, wherein the scintillating material is a plastic doped with a scintillant.

7. The method of claim 5, wherein the scintillating plastic is selected from the group consisting of polystyrene doped with at least one scintillating fluor and polyvinyltoluene doped with at least one scintillating fluor.

8. The method of claim 2, wherein at least one of the at least two molecular species provided is a substrate for an enzyme-catalyzed reaction or a series of enzyme-catalyzed reactions, another of the at least two molecular species is a product of the enzyme-catalyzed reaction or series of enzyme-catalyzed reactions and has a presence of, absence of, or degree of general molecular property-based binding affinity for the scintillating material distinct from that of the substrate, and where the difference in general molecular property-based binding affinity is a result of the enzyme-catalyzed reaction or series of enzyme-catalyzed reactions.

9. The method of claim 8, wherein the general molecular property-based binding affinity is due to the presence of positive charge, the absence of positive charge, the presence of negative charge, the absence of negative charge, the presence of a dipole moment, the absence of a dipole moment, the presence of hydrophobicity,

or the absence of hydrophobicity.

10. 10) The method of claim 8, wherein the enzyme catalyzed reaction is selected from the group consisting of kinase catalyzed reactions, lipase catalyzed reactions, phosphatase catalyzed reactions, protease catalyzed reactions, and tRNA transferase catalyzed reactions.

11. 11) The method of claim 8, wherein the enzyme catalyzed reaction is selected from the group consisting of the reaction cascade or any portion thereof for the sequential synthesis of uridinediphosphate-N-acetylmuramic acid pentapeptide catalyzed by the enzymes MurA, MurB, MurC, MurD, MurE, and MurF.

12. 12) The method of claim 8, wherein the enzyme catalyzed reaction is that catalyzed by MurA.

13. 13) The method of claim 8, wherein the enzyme catalyzed reaction is that catalyzed by MurB.

14. 14) The method of claim 8, wherein the enzyme catalyzed reaction is that catalyzed by MurC.

15. 15) The method of claim 8, wherein the enzyme catalyzed reaction is that catalyzed by MurD.

16. 16) The method of claim 8, wherein the enzyme catalyzed reaction is that catalyzed by MurE.

17. 17) The method of claim 8, wherein the enzyme catalyzed reaction is that catalyzed by MurF.

18. 18) The method of claim 8, wherein the enzyme catalyzed reaction is the reaction cascade for the sequential synthesis of uridinediphosphate-N-acetylmuramic acid pentapeptide catalyzed by the enzymes MurA, MurB, MurC, MurD, MurE, and MurF.

19. 19) The method of claim 4, further comprising performing the method on a plurality of samples to effect a high throughput screen.

20. 20) The method of claim 19, wherein the high throughput screen is used to identify compounds which inhibit an enzyme catalyzed reaction selected from the group consisting of the reaction cascade or any portion thereof for the sequential synthesis of uridinediphosphate-N-acetylmuramic acid pentapeptide catalyzed by the enzymes MurA, MurB, MurC, MurD, MurE, and MurF; kinase catalyzed reactions, lipase catalyzed reactions, phosphatase catalyzed reactions, protease catalyzed reactions, and tRNA transferase catalyzed reactions.

21) A plate suitable for a direct adsorption binding assay, said plate comprised of a scintillating material and having one or more wells.

22) A plate suitable for a direct adsorption binding assay, said plate comprising wells coated with a scintillant material.

23) The plate of claim 21, wherein said wells are derivatized such that the walls of the wells are positively charged.

24) The plate of claim 21, wherein said wells are derivatized such that the walls of the wells are negatively charged.

25) The plate of claim 21, wherein said wells are derivatized such that the walls of the wells are hydrophobic.

26) The plate of claim 23, wherein the walls of the wells are derivatized with methyltrioctylammonium bromide.

27) The plate of claim 24, wherein the walls of the wells are derivatized with octadecyl sulfate.

28) The plate of claim 25, where the walls of the wells are derivatized with polylysine-N^{ε}-palmitate.